

ABSTRACT

A water management system for a fuel cell having an anode chamber including a fuel, a cathode chamber in fluid communication with an oxidizing agent, and a proton conducting membrane electrolyte separating the chambers. The system includes a gas plenum, a first valve for controlling a first flow of a gas from the anode chamber into the gas plenum, and a second valve for controlling a second flow of the gas collected by the gas plenum into the cathode chamber. The first valve is opened allowing the first flow while the second valve is closed between the gas plenum and the cathode chamber so that effluent gas is collected in the gas plenum. When the amount of the effluent gas in the gas plenum reaches a predetermined value, the first valve is closed and the second valve is opened to allow the second flow.